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ATTACHMENT 3

DISPERSION MODELING REPORT

ATTACHMENT 3.0
AIR QUALITY ANALYSIS

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APPENDICES

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3.0 AIR QUALITY ANALYSIS

3.1 PURPOSE

Biopol Laboratory, Inc. (Biopol) is proposing to construct a new allergen purification facility in an industrial park on Lochsa Street in Post Falls, Idaho. The facility will purify harvested pollen from timothy hay and other allergens for further processing elsewhere to produce vaccines for individuals with allergies. The purpose of the modeling is twofold: (i) to determine the potential impacts of the proposed construction on the ambient air quality; and (ii) to establish emission limits to be incorporated in a Facility Emission Cap (FEC) permit.

The facility will be constructed in phases; the modeling analysis provides for the equipment that will be included in all phases anticipated over the next five years.

Emission sources at the facility will include boilers, an electric generator, water heaters, rooftop air handling units (which include pre-heating and humidification sections), house vacuum systems, laboratory hood exhaust vents, and process operations, which include a fluidized bed dryer and a filter/dryer. These operations will emit criteria pollutants: oxides of nitrogen (NO_x), carbon monoxide (CO), sulfur oxides (SO_x), volatile organic compounds (VOCs), particulate matter (PM); and the following toxic air pollutants (TAPs): acetone, ethanol, isopropyl alcohol, methanol, and tetrachloroethylene (perchloroethylene). Emission control equipment will be used to reduce emissions from two process sources: a high efficiency particulate air filter (HEPA) on the fluidized bed dryer/separator and a vent condenser on the filter/dryer (de-fatting operation), both of which are associated with the Timothy Pollen processing operations.

Based on emission calculations, the proposed facility will be a minor source for all pollutants. In order to obtain the maximum operating flexibility, Biopol is applying for a FEC permit, which will establish caps for each regulated pollutant and will allow the installation of currently unspecified equipment without having to re-open the permit.

As part of the FEC requirements, air dispersion modeling must be performed for all pollutants that are greater than the modeling thresholds established by the Department. The Department uses two levels of modeling thresholds. The first level is an emissions level below which modeling is rarely needed. If facility-wide emissions will remain below these levels, modeling is not necessary, even for a FEC permit. These thresholds are as follows:

- CO: 14 pounds per hour (lb/hr)
- NO_x: 1 ton per year (tpy)
- SO_2: 1 tpy and 0.2 lb/hr
- PM_{10}: 1 tpy and 0.2 lb/hr

The second level of modeling thresholds identifies emissions rates below which modeling is typically not required; however, the Department may make the determination on a case-by-case basis considering the characteristics of the release and the potentially exposed public. These threshold levels are as follows:

- CO: 70 lb/hr
- NO_x: 7 tpy
- SO_2: 7 tpy and 0.9 lb/hr
- PM_{10}: 7 tpy and 0.9 lb/hr

Based on worst-case emission estimates, emissions of CO are below the levels of the first threshold; therefore, modeling is not required for this pollutant. SO_2 emissions are above the first threshold for hourly emissions assuming the units operate continuously for an hour, but below the second threshold. However, annual SO_2 emissions are well below the first threshold level. The emergency generator is the primary source of the SO_2 emissions. Based on discussions with the Department's modeling staff, SO_2 modeling is not required because during normal operations (i.e., non-emergencies), emissions will remain below the first level threshold. Worst-case emissions of NO_x and PM_{10} will be above the second threshold, so modeling is being conducted for these pollutants.

Additionally, the model will be used to demonstrate that emissions of perchloroethylene (a TAP) will not cause an exceedance of the Acceptable Ambient Concentration (AACs) set forth in IDAPA 58.01.01.585 and 586. Other TAPs are below the Department's threshold levels, so modeling is not required.

In summary, the modeling analysis is being conducted to: (i) demonstrate that at the worst-case scenario of emissions and exhaust parameters, emissions under the facility emission cap will not cause an exceedance of the National Ambient Air Quality Standards (NAAQS) for PM_{10} and NO_2; and (ii) demonstrate that emissions of perchloroethylene (the only TAP that exceeds the Screening Emission Level in IDAPA 58.01.01.586) will not exceed the AAC. In establishing the FEC, a number of possible scenarios of stack heights and locations, exhaust gas directions and velocities, and emission rates have been identified. The model is being used to evaluate each of these scenarios and identify the worst-case scenario from an ambient air quality perspective. Accordingly, future growth at the facility can be accommodated with the assurance that the emissions will not cause adverse impacts as long as they remain below the FEC.

3.2 MODEL DESCRIPTION/JUSTIFICATION

The American Meteorological Society (AMS) and the U.S. Environmental Protection Agency (EPA) jointly formed the AMS/EPA Regulatory Model Improvement Committee (AERMIC) to develop an accurate air quality model. They developed the AERMIC Dispersion Model (AERMOD). The AERMOD model (Version 07026) is accepted for regulatory analyses and is the recommended model for determining ground-level ambient air concentrations in all types of terrain. AERMOD was used for the criteria and TAP pollutant analyses.

Under stable conditions, AERMOD uses a steady-state, Gaussian plume equation to calculate ambient concentrations from stacks. In unstable conditions, AERMOD uses a non-Gaussian probability density function to calculate ambient concentrations. Input variables to the model include: emission rates, stack heights, meteorological data, receptor locations, terrain elevations, and stack gas characteristics. The model can also be used to evaluate the effects of aerodynamic wakes and eddies that are formed by buildings and other structures on plume dispersion (PRIME model).

Review of a topographic map of the area around the proposed Biopol facility indicates that some of the receptors are in complex terrain. AERMOD has been developed to incorporate complex terrain considerations into the model output.

EPA's Building Profile Input Program (BPIP) algorithms will be used to determine the impacts of building downwash. Buildings on site will be included in the analysis; there are no significant structures off site. The results of the BPIP analysis will be incorporated into the AERMOD model.

IES uses a purchased software package (Trinity Breeze, Version 5.2.1) to interface with AERMOD to assist in setting up and running the model. Some of the model runs were conducted without a graphical user interface as well.

AERMOD is classified by the EPA as a preferred/recommended air quality model for refined analyses. Based on the model's incorporation of algorithms to address complex terrain, multiple buildings and stacks, and EPA's "approval" of this model, AERMOD is an appropriate model for this application.

The proposed methodology for conducting the air dispersion analysis was submitted to the Department for review on March 21, 2007, and approved on March 27, 2007. Several changes to the protocol were discussed with the Department and were documented in an e-mail to the Department. Correspondence with the Department is provided in Attachment 3-A.

3.3 EMISSION AND SOURCE DATA

Table 3-1 presents a summary of the modeled emission rates for this project. Emission calculations are provided in Attachment 2 of the FEC application. This is a new facility, so there are no existing emission sources at the facility; actual emissions are not provided. Table 3-1 presents potential (worst-case) emissions.

All of the sources were modeled running for 8,760 hours per year, except for the emergency generator. The generator was modeled at 500 hours per year; therefore, two model runs were conducted for PM_{10} – one for the higher short-term emission rate and a second for the annual rate. Additionally, for the short-term model run, the model was set up so that the generator operated for 1 hour each day.

All of the emission sources listed on Table 3-1 were included in the modeling analysis; none were treated as inconsequential.

Table 3-2 provides anticipated source parameters (stack height, diameter, velocity, etc.) for the modeled sources of PM_{10} emissions as well as source parameters that were actually used in the model for the modeled scenario. There may differences between the anticipated parameters and the modeled parameters as the intent of the modeling was to show worst-case release scenarios.

TABLE 3-1
POTENTIAL EMISSION RATES USED IN AIR DISPERSION
BIOPOL, POST FALLS, IDAHO

Model ID	Source Description	NO_2		PM_{10}		Perc.	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
SRC 8	USM Inoculation area air handling unit	0.0032	0.014	0.0005	0.002	NA	NA
SRC 9	USM Process/Support air handling unit	0.0026	0.011	0.0004	0.002	NA	NA
SRC 10	SSM Pollen Lab air handling unit	0.0345	0.151	0.0052	0.023	NA	NA
SRC 11	Process Development/QC Labs air handling unit	0.0299	0.131	0.0045	0.020	NA	NA
SRC 13	Administration air handling unit	0.0040	0.018	0.0006	0.003	NA	NA
SRC 14	Timothy Pollen Building air handling unit (Future)	0.0295	0.129	0.0045	0.020	NA	NA
SRC 16	Ragweed Building air handling unit (Future)	0.0295	0.129	0.0045	0.020	NA	NA
SRC 17	Birch Building air handling unit (Future)	0.0295	0.129	0.0045	0.020	NA	NA
SRC 18	Spanish Mites air handling unit (Future)	0.0505	0.221	0.0077	0.034	NA	NA
SRC 19	SSM Expansion air handling unit (Future)	0.0345	0.151	0.0052	0.023	NA	NA
SRC 1	Natural gas-fired boiler (125 bhp)	0.3000	1.3	0.0500	0.200	NA	NA
SRC 1	Natural gas-fired boiler (125 bhp)	0.3000	1.3	0.0500	0.200	NA	NA
SRC 1	Natural gas-fired boiler (125 bhp) Future	0.3000	1.3	0.0500	0.200	NA	NA
SRC 1	Natural gas-fired boiler (125 bhp) Future	0.3000	1.3	0.0500	0.200	NA	NA
SRC 5	Natural gas-fired boiler (50 bhp) Future	0.1200	0.5	0.0200	0.080	NA	NA
SRC 6	Emergency generator (1,100 KW)	12.36	3.1	0.4400	0.110	NA	NA
SRC 12	US Mite SSM-2009 (five exhaust hoods)	NA	NA	0.170	0.745	NA	NA
SRC 7	SSM Building Exhaust	NA	NA	1.06	4.643	0.0379	0.166
SRC 15	Process Development Hoods	NA	NA	0.4300	1.883	NA	NA

TABLE 3-1
POTENTIAL EMISSION RATES USED IN AIR DISPERSION
BIOPOL, POST FALLS, IDAHO

Model ID	Source Description	NO_2		PM_{10}		Perc.	
		lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
SRC 21	Timothy Building fluid bed dryer	NA	NA	0.4300	1.883	NA	NA
SRC 22	Timothy Building vacuum cleaner	NA	NA	0.0400	0.175	NA	NA
SRC 35	Timothy Building pneumatic vent	NA	NA	0.040	0.175	NA	NA
SRC 24	Spanish Mite Building media prep vent	NA	NA	0.110	0.482	NA	NA
SRC 25	Spanish Mite Building vacuum cleaner	NA	NA	0.040	0.175	NA	NA
SRC 26	Spanish Mite Building pneumatic vent	NA	NA	0.260	1.139	NA	NA
SRC 27	Ragweed Building fluid bed dryer	NA	NA	0.430	1.883	NA	NA
SRC 28	Ragweed Building vacuum cleaner	NA	NA	0.040	0.175	NA	NA
SRC 29	Ragweed Building pneumatic vent	NA	NA	0.040	0.175	NA	NA
SRC 30	Birch Building fluid bed dryer	NA	NA	0.430	1.883	NA	NA
SRC 31	Birch Building vacuum cleaner	NA	NA	0.040	0.175	NA	NA
SRC 32	Birch Building pneumatic vent	NA	NA	0.040	0.175	NA	NA

TABLE 3-2
STACK PARAMETERS USED IN PM_{10} MODELING SCENARIOS
BIOPOL, POST FALLS, IDAHO

Model ID	Source Description	Type of Source	Base Elevation (ft)	Exhaust Temp. (F)	Anticipated Parameters			Modeled Parameters		
					Velocity (fpm)	Stack Diameter (ft)	Stack Height (ft)	Velocity (fpm)	Stack Diameter (ft)	Stack Height (ft)
SRC 8	USM Inoculation area air handling unit	Point	2,104	70	3,000	0.8	39	3,000	0.8	34
SRC 9	USM Process/Support air handling unit	Point	2,104	70	3,000	1.34	39	3,000	1.34	34
SRC 10	SSM Pollen Lab air handling unit	Point	2,108	70	3,000	3.23	39	3,000	3.23	34
SRC 11	Process Development/QC Labs air handling unit	Point	2,104	70	3,000	2.91	39	3,000	2.91	34
SRC 13	Administration air handling unit	Point	2,106	70	3,000	2.52	39	3,000	2.52	34
SRC 14	Timothy Pollen Building air handling unit (Future)	Point	2,106	70	3,000	2.99	50	3,000	2.99	45
SRC 16	Ragweed Building air handling unit (Future)	Point	2,105	70	3,000	2.99	50	3,000	2.99	45
SRC 17	Birch Building air handling unit (Future)	Point	2,105	70	3,000	2.99	50	3,000	2.99	45

TABLE 3-2
STACK PARAMETERS USED IN PM_{10} MODELING SCENARIOS
BIOPOL, POST FALLS, IDAHO

Model ID	Source Description	Type of Source	Base Elevation (ft)	Exhaust Temp. (F)	Anticipated Parameters			Modeled Parameters		
					Velocity (fpm)	Stack Diameter (ft)	Stack Height (ft)	Velocity (fpm)	Stack Diameter (ft)	Stack Height (ft)
SRC 18	Spanish Mites air handling unit (Future)	Point	2,101	70	3,000	3.21	29	3,000	3.21	24
SRC 19	SSM Expansion air handling unit (Future)	Point	2,100	70	3,000	3.23	50	3,000	3.23	47
SRC 1	Natural gas-fired boiler (125 bhp)	Point	2,106	405	2,306	1	39	2,306	1	34
SRC 1	Natural gas-fired boiler (125 bhp)	Point	2,106	405	2,306	1	39			
SRC 1	Natural gas-fired boiler (125 bhp) Future	Point	2,106	405	2,306	1	39			
SRC 1	Natural gas-fired boiler (125 bhp) Future	Point	2,106	405	2,306	1	39			
SRC 5	Natural gas-fired boiler (50 bhp) Future	Point	2,106	394	950	1	39	2,106	1	34
SRC 6	Emergency generator (1,000 KW)	Point	2,102	975	9,899	1	12	9,899	1	12
SRC 12	US Mite SSM-2009 (exhaust hoods)	Point	2,103	70	3,000	1	39	3,000	1	34

TABLE 3-2
STACK PARAMETERS USED IN PM_{10} MODELING SCENARIOS
BIOPOL, POST FALLS, IDAHO

Model ID	Source Description	Type of Source	Base Elevation (ft)	Exhaust Temp. (F)	Anticipated Parameters			Modeled Parameters		
					Velocity (fpm)	Stack Diameter (ft)	Stack Height (ft)	Velocity (fpm)	Stack Diameter (ft)	Stack Height (ft)
SRC 7	SSM Building Exhaust	Point	2,103	70	3,000	2.4	39	3,000	1.64	34
SRC 15	Process Development Hoods	Point	2,102	70	3,000	2.0	39	3,000	2.0	34
SRC 21	Timothy Building fluid bed dryer	Point	2,105	70	3,000	1.5	50	3,000	1.5	45
SRC 22	Timothy Building vacuum cleaner	Point	2,105	70	3,000	0.5	50	3,000	0.5	45
SRC 35	Timothy Building pneumatic vent	Point	2,105	70	3,000	0.5	50	3,000	0.5	45
SRC 24	Spanish Mite Building media prep vent	Point	2,100	70	3,000	0.72	29	3,000	0.72	24
SRC 25	Spanish Mite Building vacuum cleaner	Point	2,100	70	3,000	0.5	29	3,000	0.5	24
SRC 26	Spanish Mite Building pneumatic vent	Point	2,100	70	3,000	1.1	29	3,000	1.1	24
SRC 27	Ragweed Building fluid bed dryer	Point	2,105	70	3,000	1.5	50	3,000	1.5	45
SRC 28	Ragweed Building vacuum cleaner	Point	2,105	70	3,000	0.5	50	3,000	0.5	45
SRC 29	Ragweed Building pneumatic vent	Point	2,104	70	3,000	0.5	50	3,000	0.5	45

TABLE 3-2
STACK PARAMETERS USED IN PM_{10} MODELING SCENARIOS
BIOPOL, POST FALLS, IDAHO

Model ID	Source Description	Type of Source	Base Elevation (ft)	Exhaust Temp. (F)	Anticipated Parameters			Modeled Parameters		
					Velocity (fpm)	Stack Diameter (ft)	Stack Height (ft)	Velocity (fpm)	Stack Diameter (ft)	Stack Height (ft)
SRC 30	Birch Building fluid bed dryer	Point	2,104	70	3,000	1.5	50	3,000	1.5	45
SRC 31	Birch Building vacuum cleaner	Point	2,104	70	3,000	0.5	50	3,000	0.5	45
SRC 32	Birch Building pneumatic vent	Point	2,104	70	3,000	0.5	50	3,000	0.5	45

As presently designed, all emission sources are point sources. However, in order to show worst-case dispersion and because the precise location of each exhaust vent on the roof has not been finalized, most of the emission sources were modeled as volume sources. The exceptions to this are the boiler exhausts and the emergency generator exhaust, which were modeled as point sources. Another note regarding the boiler exhausts, there are four identical boilers that will be located in the same area. In order to reduce model run times, the boilers were modeled with all of the emissions exhausting through a single stack.

The initial lateral dimensions (σ_y) for the point sources that were modeled as volume sources were calculated by dividing the length of the building which included the emission source by 4.3. The initial vertical dimensions (σ_z) were calculated by dividing the height of the building which included the emission source by 2.15. The release height was the height of the building as all of the sources will be located on top of buildings. Table 3-3 includes a summary of the source dimensions for each point source modeled as a volume source.

Attachment 3-B includes a facility plot plan for the site. Building dimensions are summarized on Table 3-4.

The ambient air boundary for the facility is the property line. The facility is located in an industrial park and is not used by the general public. Security measures, including signs, will be implemented to discourage public access to the property. This was discussed with the Department during a pre-application meeting on January 31, 2007; the Department concurs with this approach.

As indicated by the Department, there are no other emission sources in the vicinity of Biopol's proposed site that need to be included in the modeling analysis.

The UTM coordinates of the approximate center of the facility are 499,676 meters east and 5,282,972 meters north. The street address of the facility is at the intersection of Lochsa Street and Clearwater Loop (east of Moyie Street) in Post Falls, Idaho.

3.4 RECEPTOR NETWORK

A Cartesian receptor grid was used to determine the maximum off-site impact. Based on preliminary model runs, the maximum off-site concentration occurs at or near the property line. Therefore, a fine receptor grid was used near the property boundary and a course grid was used further away. The Cartesian receptor grid spacing around the facility for the analysis was as follows:

Along Fenceline: 25-meter spacing (minimum)
0 to 0.2 km: 25-meter spacing
0.2 to 1.5 km: 100-meter spacing
1.5 to 4 km: 500-meter spacing

TABLE 3-3
SUMMARY OF SOURCE DIMENSIONS FOR POINT SOURCES MODELED AS VOLUME SOURCES FOR NO_2 AND PERCHLOROETHYLENE[1]
BIOPOL, POST FALLS, IDAHO

Model ID	Source Description [2]	Initial Lateral Dimension (ft)	Initial Lateral Dimension (ft)	Release Height (ft)
SRC 37	Combines SRCs 8, 9, 10, 11 & 13 (NO_2 emissions only)	58.1	13.5	28.9
SRC 38	Combines SRCs 14, 16 & 17 (NO_2 emissions only)	22.0	18.7	40.0
SRC 39	Combines SRCs 18 & 19 (NO_2 emissions only)	35.1	8.9	18.7
SRC 40	SRC 7 (PCE emissions only)	26.6	9.2	20

[1] Boilers and the generator (NO_2) sources were modeled as shown on Table 3-2.
[2] See Table 3-1 for SRC descriptions.

TABLE 3-4
BUILDING PARAMETERS
BIOPOL, POST FALLS, IDAHO

Building Name	Height (ft)	Length (ft)	Width (ft)	Base Elevation (ft)
Main Building	29	113	103	2,105
Warehouse	29	148	97	2,110
Central Utilities	29	125	35	2,107
Timothy Pollen	40	87	34	2,107
Ragweed	40	87	34	2,107
Birchwood	40	87	34	2,106
Spanish Mites	19	106	103	2,103
Spanish Mites (future)	19	103	76	2,102

3.5 ELEVATION DATA

United States Geological Survey (USGS) Digital Elevation Model (DEM) files were imported to determine elevations. 7½-minute DEMs with a resolution of 30 meters were used. Based on the size of the proposed receptor grid, the Post Falls, Idaho and Liberty Lake, Washington-Idaho quadrangle DEM files were used.

3.6 METEOROLOGIGAL DATA

Meteorological data was provided by the Department. A 5-year period of data (1987-1991) from Spokane, Washington, was used for the analysis. The Department processed the data using AERMET and land use classification data for the vicinity of the meteorological station.

3.7 LAND-USE CLASSIFICATION

The area around the proposed site is classified as rural based on a review of the topographic maps of the area and first hand knowledge of the site. The specific break-down of the classification of the area for use in AERMET was provided by the Department.

3.8 BACKGROUND CONCENTRATIONS

Background concentrations for the area were provided by the Department and are as follows:

PM_{10}:	67 $\mu g/m^3$ for 24-hour averaging period
	23.7 $\mu g/m^3$ for annual averaging period
NO_2:	32 $\mu g/m^3$ for 24-hour averaging period

PM_{10} background concentrations are based on monitoring data for the Post Falls area and the NO_2 background concentration is based on default background concentrations used by the Department for small town and suburban areas.

As requested by the Department, modeled impacts (before the inclusion of background concentrations) were increased by 20 percent to account for uncertainties in the meteorological data.

Additionally, as provided by the Department, there are no co-contributing sources in the area of the proposed facility, so only emissions from the proposed Biopol facility were included in the analysis.

3.9 EVALUATION OF COMPLIANCE WITH STANDARDS

The results of the analysis show that under worst-case release parameters and maximum emission rates, the off-site ambient impact is below the NAAQS for PM_{10} and NO_2 and below the AAC for perchloroethylene.

Table 3-5 shows that the results of the PM_{10} analysis for the off-site impact from the proposed Biopol facility are below the primary and secondary National Ambient Air Quality Standards (NAAQSs) of 150 $\mu g/m^3$ on 24-hour basis and 50 $\mu g/m^3$ on an annual basis. The maximum off-site impacts, including background concentrations, are 127.7 $\mu g/m^3$ (sixth highest) on a 24-hour basis and 36.5 $\mu g/m^3$ on an annual basis. The results include the additional 20 percent factor requested by the Department. The maximum values occurred at the property line.

Table 3-6 shows the results for the NO_2 analysis. The results are below the NAAQS of 100 $\mu g/m^3$ on an annual basis. The maximum off-site concentration is 42.64 $\mu g/m^3$ (including the background concentration) on an annual basis. These results also include the additional 20 percent factor requested by the Department. The maximum values occurred at the property line with the air handlers and process vents modeled as volume sources.

Table 3-7 shows the results of the perchloroethylene analysis. The results indicate that highest estimated ambient concentration is 0.97 $\mu g/m^3$, which is below the AAC of 2.1 $\mu g/m^3$. The maximum concentration includes the 20 percent factor requested by the Department. The maximum values occurred at the property line and the emission source was modeled as a volume source.

The Department's completed checklist (Appendix C of the Department's Guidance Document) is provided in Attachment 3-C.

3.9 ELECTRONIC COPIES OF MODELING FILES

Data input and output files are included in Attachment 3-D. The files were compressed using WINZIP. The naming convention that was used for the electronic files is as follows:

- BIOPOL-PERC-FNLGRDVOLUME2xtpy.abc
- BIOPOL-PM-ELEVATED-FINALGRID.abc
- BIOPOL-PM-ELEVATED-FINALGRIDHOURLY.abc
- BIOPOL-ELEVATED-FINALGRIDVOLUMExxxx.abc

Where xxxx stands for the year modeled (1987-1991) and abc is the file extension. The following extensions were used:

- .DAT – input file
- .RAW – raw data file
- .LST – result file
- .BPI – BPIP input file

- .BPO – BPIP output file
- .WAK – downwash file

Please note that there may not be a *.BPI, *.BPO, and *.WAK file for each *.DAT file. However, the building wake data is reflected in each *.DAT input file.

The following 7.5-minute USGS DEM files are being submitted:

- Post Falls
- Liberty Lake

Meteorological data files are not being submitted as they were provided by the Department.

TABLE 3-5
SUMMARY OF AERMOD MODEL RESULTS: PM_{10}
AIR DISPERSION ANALYSIS – NAAQS EVALUATION
BIOPOL, POST FALLS, IDAHO

Averaging Period	Primary NAAQS ($\mu g/m^3$)	Secondary NAAQS ($\mu g/m^3$)	Year	Highest Off-site Concentration ($\mu g/m^3$)		Sixth Highest Off-site Concentration ($\mu g/m^3$)	
				Without Background	Including Background	Without Background	Including Background
24-hour	150	150	1987 - 1991	--	--	60.7	127.7
Annual	50	50	1987 - 1991	12.8	36.5	--	--

Note: Off-site concentrations include 20 percent "safety factor" as requested by the Department.

TABLE 3-6
SUMMARY OF AERMOD MODEL RESULTS: NO_2
AIR DISPERSION ANALYSIS – NAAQS EVALUATION
BIOPOL, POST FALLS, IDAHO

Averaging Period	Primary NAAQS ($\mu g/m^3$)	Secondary NAAQS ($\mu g/m^3$)	Year	Highest Off-site Concentration ($\mu g/m^3$)	
				Without Background	Including Background
Annual	100	100	1987	9.12	41.12
			1988	9.76	41.76
			1989	9.90	41.90
			1990	10.64	42.64
			1991	10.03	42.03

Note: Off-site concentrations include 20 percent "safety factor" as requested by the Department.

TABLE 3-7
SUMMARY OF AERMOD MODEL RESULTS: PERCHLOROETHYLENE
AIR DISPERSION ANALYSIS – TAPS EVALUATION
BIOPOL, POST FALLS, IDAHO

Averaging Period	TAP ($\mu g/m^3$)	Year	Highest Off-site Concentration ($\mu g/m^3$)	
			Without Background	Including Background
Annual	2.1	1987-1991	0.97	0.97

Note: Offsite concentrations include 20 percent "safety factor" as requested by the Department.

ATTACHMENT 3-A

DISPERSION MODELING PROTOCOL, DEPARTMENT COMMENTS, AND FOLLOW-UP CORRESPONDENCE

IES ENGINEERS

1720 Walton Road, Blue Bell, PA 19422 610-828-3078 Fax 610-828-7842

March 21, 2007

E-MAIL AND FIRST CLASS MAIL
Mr. Kevin Schilling
Air Quality Division
Idaho Department of Environmental Quality
1410 North Hilton
Boise, ID 83706

Subject: Dispersion Modeling Protocol
Biopol Laboratory, Inc.
Post Falls, Idaho
IES Project No. EHS07308.01

Dear Mr. Schilling:

On behalf of Biopol Laboratory, Inc. (Biopol), IES Engineers is pleased to submit this protocol for conducting the air dispersion modeling for the proposed Biopol facility in Post Falls, Idaho. The purpose of the modeling is twofold: (i) to determine the potential impacts of the proposed construction on the ambient air quality; and (ii) to establish emission limits to be incorporated in a Facility Emission Cap (FEC) permit.

As you know, Biopol will be submitting an application for a FEC permit under the Permit-to-Construct (PTC) program. The project schedule is very tight; therefore, we would appreciate the Department's expeditious review of this protocol. Additionally, as we discussed during our March 7, 2007, conference call, the Department will be providing the following information, which we would also appreciate obtaining as soon as possible:

- Five years of pre-processed meteorological data for the Post Falls area
- Background ambient air quality concentrations
- Source parameters for any nearby facilities that may need to be included in the model

This protocol is being submitted to satisfy the requirements of IDAPA 58.01.01.175 through181. The protocol follows the Department's *Modeling Protocol Template* as well as the appropriate requirements contained in the *State of Idaho Air Quality Modeling Guideline*. The following sections are included in this protocol:

- Project Description and Purpose of Modeling
- Modeling Applicability Assessment – including criteria pollutants and toxic air pollutants (TAPs)
- Modeling Analyses Methodology
- Model Input Data
- Outline for Modeling Report

1.0 PROJECT DESCRIPTION AND PURPOSE OF MODELING

Biopol Laboratory, Inc. (Biopol) is proposing to construct a new allergen purification facility in an industrial park on Lochsa Street in Post Falls, Idaho. The UTM coordinates of the approximate center of the facility are 499,676 meters east and 5,282,972 meters north. The facility will purify harvested pollen from timothy hay and other allergens for further processing elsewhere to produce vaccines for individuals with allergies. The facility will be constructed in phases; the modeling analysis will provide for the equipment that will be included in all phases anticipated over the next five years.

Emission sources at the facility will include boilers, an electric generator, water heaters, rooftop air handling units (which include pre-heating and humidification sections), house vacuum systems, laboratory hood exhaust vents, and process operations, which include a fluidized bed dryer and a filter/dryer. These operations will emit criteria pollutants: oxides of nitrogen (NO_x), carbon monoxide (CO), sulfur oxides (SO_x), volatile organic compounds (VOC), particulate matter; and toxic air pollutants (TAPs): acetone, ethanol, isopropyl alcohol, methanol, tetrachloroethylene (perchloroethylene), and petroleum ether. Emission control equipment is used to reduce emissions from two process sources: a high efficiency particulate air filter (HEPA) on the fluidized bed dryer/separator, and a vent condenser on the filter/dryer (de-fatting operation), both of which are associated with the Timothy Pollen processing operations.

Based on preliminary emission calculations, the proposed facility will be a minor source for all pollutants. In order to obtain the maximum operating flexibility, Biopol will be applying for a FEC permit, which will establish caps for each regulated pollutant and will allow the installation of currently unspecified equipment without having to re-open the permit. As part of the FEC requirements, air dispersion modeling must be performed for particulate matter less than or equal to 10 micrometers (PM_{10}), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), and CO. Additionally, the model will be used to demonstrate that emissions of perchloroethylene (a TAP) will not cause an exceedance of the Acceptable Ambient Concentration (AACs) set forth in IDAPA 58.01.01.585 and 586.

The modeling analysis is being conducted to: (i) demonstrate that at the worst-case scenario of emissions and exhaust parameters, emissions under the facility emission cap will not cause an exceedance of the National Ambient Air Quality Standards (NAAQS) for PM_{10}, SO_2, NO_2, and CO; and (ii) demonstrate that emissions of perchloroethylene (the only TAP that exceeds the Screening Emission Level in IDAPA 58.01.01.586) will not exceed the AAC. In establishing the FEC, we will identify a number of scenarios of stack heights and locations, exhaust gas directions and velocities, and emission rates. We will use the model to evaluate each of these scenarios and identify the worst-case scenario from an ambient air quality perspective. Accordingly, future growth at the facility can be accommodated with the assurance that the emissions will not cause adverse impacts as long as they remain below the FEC.

2.0 EMISSION DATA

Biopol is proposing to limit its combined emissions of all regulated pollutants to between one and ten tons per year. Preliminary estimates of the potential facility-wide emissions are as follows:

Pollutant	Preliminary Estimate (tpy)	Sources
PM_{10}	0.80	Natural gas and diesel fuel combustion, process sources
SO_2	0.59	Natural gas and diesel fuel combustion
NO_2	3.08	Natural gas and diesel fuel combustion
CO	2.97	Natural gas and diesel fuel combustion
Perchloroethylene	0.08	Process sources

Peak, or worst-case emissions will be used in the dispersion analysis. As a conservative measure, we propose to model the peak emissions assuming 8,760 hours of operation per year. For sources whose design does not allow continuous operation (e.g., emergency electric generator), separate model runs will be conducted to demonstrate worst-case short-term and long-term ambient impacts.

All facility emission rates are well below the applicability thresholds of the Prevention of Significant Deterioration (PSD) and non-attainment New Source Review programs.

3.0 MODELING APPLICABILITY ASSESSMENT

3.1 Criteria Pollutant Modeling Applicability

A modeling analysis is generally required with each permit application for new construction with emissions exceeding the modeling thresholds. In Biopol's case, emissions are below the Department's internal modeling thresholds; however, since Biopol is applying for a FEC permit, modeling is required for criteria pollutants (PM_{10}, SO_2, NO_2, and CO). As we discussed, lead and volatile organic compounds (VOCs) are not being included in the analysis. The only source of lead emissions would be trace quantities from combustion of natural gas or diesel fuel. VOC emissions are low (approximately 0.69 tons per year) and there is no viable model available for modeling VOC emissions from individual facilities.

All stationary sources at the facility with the potential to emit PM_{10}, SO_2, NO_2, or CO will be included in the analysis, except that PM_{10} emissions from vehicle traffic on the facility property will not be included. "Trivial" activities, as defined by the Department, will also not be included in the assessment. The facility roadways and parking lots will be paved, and given the nature of the operations at the facility, emissions from traffic will be minimal.

3.2 TAPs Modeling Applicability

Dispersion analysis of TAP emissions associated with the project is required if total emissions increases exceed TAP-specific regulatory screening emission levels (ELs). In Biopol's case, perchloroethylene is the only TAP for which emissions exceed the EL for carcinogens set forth in IDAPA 58.01.01.586; therefore, an air dispersion analysis is required for this pollutant. Perchloroethylene will be used in Timothy pollen processing and the Small Scale Manufacturing (SSM) operations and will be exhausted to the atmosphere through the laboratory ventilation system.

4.0 MODELING METHODOLOGY

4.1 Model Used

The American Meteorological Society (AMS) and the U.S. Environmental Protection Agency (EPA) jointly formed the AMS/EPA Regulatory Model Improvement Committee (AERMIC) to develop an accurate air quality model. They developed the AERMIC Dispersion Model (AERMOD). The AERMOD model (Version 07026) is accepted for regulatory analyses and is the recommended model for determining ground-level ambient air concentrations in all types of terrain. We propose to use AERMOD for the criteria and TAP pollutant analyses.

Under stable conditions, AERMOD uses a steady-state, Gaussian plume equation to calculate ambient concentrations from stacks. In unstable conditions, AERMOD uses a non-Gaussian probability density function to calculate ambient concentrations. Input variables to the model include: emission rates, stack heights, meteorological data, receptor locations (including sensitive receptors such as schools or hospitals), terrain elevations, and stack gas characteristics. The model can also be used to evaluate the effects of aerodynamic wakes and eddies that are formed by buildings and other structures on plume dispersion (PRIME model).

Review of a topographic map of the area around the proposed Biopol facility indicates that some of the receptors are in complex terrain. AERMOD has been developed to incorporate complex terrain considerations into the model output.

EPA's Building Profile Input Program (BPIP) algorithms will be used to determine the impacts of building downwash. Buildings on site will be included in the analysis; there are no significant structures off site. The results of the BPIP analysis will be incorporated into the AERMOD model.

IES uses a purchased software package (Trinity Breeze, Version 5.2.1) to interface with AERMOD to assist in setting up and running the model. However, we anticipate running the model without a graphical user interface as well.

4.2 Criteria Pollutant Modeling Methodology

This is a new facility; therefore, all proposed emission sources that potentially emit criteria pollutants (PM_{10}, SO_2, NO_2, and CO) will be included in the analysis, except that PM_{10} emissions from the paved roads will not be included.

As we discussed, other nearby sources (those within approximately 1,000 feet) will be included in the modeling analysis. Buck Knives is located adjacent to the property. As requested, we provided UTM coordinates (see Section 1.0) so that the Department can provide emissions, coordinates, and exhaust parameters for nearby sources that should be included in this analysis.

Modeling will be conducted to demonstrate compliance with the following ambient concentrations and averaging periods:

Pollutant	Averaging Time	Standard ($\mu g/m^3$)	Model Value Used
CO	1-hour	40,000	Second highest hourly value (i.e., not to be exceeded more than once a year)
	8-hour	10,000	Second highest hourly value (i.e., not to be exceeded more than once a year)
NO_2	Annual	100	Maximum value (i.e., not to be exceeded in any calendar year)
SO_2	3-hour	1,300	Second highest hourly value (i.e., not to be exceeded more than once a year)
	24-hour	365	Second highest hourly value (i.e., not to be exceeded more than once a year)
	Annual	80	Maximum value (i.e., not to be exceeded in any calendar year)
PM_{10}	24-hour	150	Second highest daily value (i.e., not to be exceeded more than once a year)
	Annual	50	Maximum value (i.e., not to be exceeded in any calendar year)

Background concentrations will be included in the analysis. The Department will provide the background concentrations for each modeled criteria pollutant (PM_{10}, SO_2, NO_2, and CO).

4.3 TAP Modeling Methodology

A screening-level dispersion analysis will be conducted to demonstrate that the maximum off-site concentration of perchloroethylene will not exceed the AAC (2.1 $\mu g/m^3$ averaged over a 1-year period). We will model the maximum perchloroethylene emission rate and the worst-case dispersion parameters. The modeling will be conducted using AERMOD and the highest annual concentration will be compared against the AAC.

5.0 MODEL INPUT DATA

Table 1 presents a summary of the model input parameters that are proposed for the analysis using AERMOD.

The ambient air boundary for the facility is the property line. The facility is located in an industrial park and is not used by the general public. Security measures, including signs, will be implemented to discourage public access to the property. This was discussed with the Department during a pre-application meeting on January 31, 2007; the Department concurs with this approach.

A Cartesian receptor grid and a discrete receptor grid will be used to determine the maximum off-site impact. Based on screening-level model runs conducted using EPA's SCREEN 3 model, the anticipated maximum off-site concentration is well within 1 kilometer of the facility. A receptor grid extending 3 kilometers in all directions from the approximate center of the facility is proposed. The grid spacing for the grid is 50-meters. Receptors will be placed along the property line at a minimum spacing of 25 meters.

Table 1
Summary of AERMOD Model Input Parameters for Air Dispersion Analysis

Model Option	Value Selected
Calculate concentration or deposition	Concentration
Rural or urban option	Rural; specific breakdown, by sector, to be provided by DEQ.
Dry or wet depletion	None
Regulatory default option	Yes
Averaging period	PM_{10}: 24-hour and annual CO: 8-hour and 1-hour SO_2: 3-hour, 8-hour, and annual NO_2: annual TAP: annual
Meteorological data	Data to be provided by DEQ.
Wind profile exponents	Default
Vertical temperature gradients	Default
Grid system	Discrete receptors every 25 m at property line and Cartesian grid system as 3 km around the plant at 50-m spacing.
Terrain elevations	Elevated; elevations are imported from 7.5-Minute USGS Digital Elevation Models at 30 m resolution
Flagpole receptors	Option not used
Building wake effects	Yes, as determined by EPA's BPIP model and incorporated into AERMOD.

5.1 Meteorological Data

Based on our recent discussions, the Department will provide meteorological data for the most recent five-year period, to be used in the AERMOD analysis. The Department has determined that these data are representative of the Post Falls area. It is our understanding that the Department has already processed the meteorological data.

5.2 Emission Release Parameters

Source parameters will be based on anticipated worst-case information, such as emission rates and release parameters. IES anticipates performing several modeling runs to ensure that the worst-case release scenario has been established. If the worst-case parameters include a horizontal release, vertical release with a rain cap, volume or area source, IES will consult with the Department's modeling staff.

5.3 Elevation Data

United States Geological Survey (USGS) Digital Elevation Model (DEM) files will be imported to determine elevations. 7½-minute DEMs with a resolution of 30 meters will be used. Based on the size of the proposed receptor grid, the Post Falls, Idaho and Liberty Lake, Washington-Idaho quadrangle DEM files will be used. Copies of the actual DEM data used in the analysis can be provided with the modeling report.

6.0 TECHNICAL REPORT

A technical report will be prepared and included as a section with the FEC application discussing the results of the air dispersion analysis. This report will include the following information:

- Introduction/Background – including purpose of modeling analysis
- Discussion of Methodology – including justification for model
- Input Parameters – including source input data, building downwash information, receptor locations, and meteorological data in electronic format.
- Results of Ambient Impact Analysis – including maximum off-site concentrations, and comparisons with the AAC or NAAQSs. Copies of the model input and output files will also be included in electronic format.

We greatly appreciate your efforts in expediting review of this protocol. Please do not hesitate to contact Bob Schlosser or me if you should have any questions.

Sincerely,

Marjorie J. Fitzpatrick /e/
Marjorie J. Fitzpatrick, QEP
Principal Project Manager

cc: W. Rogers, DEQ
J. Pettit, DEQ
S. Sonde, Biopol
M. Sawatzky, Biopol
E. Tannebaum, IPS
E. Flagg, IPS
R. Schlosser, IES
A. Soni, IES

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

1410 NORTH HILTON, BOISE, ID 83706 · (208) 373-0502

C. L. "BUTCH" OTTER, GOVERNOR
TONI HARDESTY, DIRECTOR

March 27, 2007

Marjorie J. Fitzpatrick
IES Engineers
Blue Bell, PA

RE: Modeling Protocol for the Biopol Laboratory, Inc. Facility Located in Post Falls, Idaho

Marjorie:

DEQ received your dispersion modeling protocol on March 21, 2007. The modeling protocol was submitted on behalf of Biopol Laboratory, Inc. The modeling protocol proposes methods and data for use in the ambient impact analyses of a Permit to Construct application, utilizing a Facility Emissions Cap (FEC), for a new allergen purification facility in Post Falls, Idaho.

The modeling protocol has been reviewed and DEQ has the following comments:

- Comment 1: DEQ modeling staff utilizes two types of modeling thresholds. The first is an emissions level below which modeling is rarely needed. If facility-wide emissions will remain below these levels, modeling is not necessary, even for a FEC permit. These thresholds are as follows: CO = 14 pounds per hour; NOx = 1 ton per year; SO2 = 1 ton per year and 0.2 pounds per hour; PM10 = 1 ton per year and 0.2 pounds per hour; lead = 100 pounds per month. The second level of modeling thresholds identifies emissions rates below which modeling is typically not required; however, DEQ will make the determination on a case-by-case basis considering the characteristics of the release the potentially exposed public. These threshold levels are as follows: CO = 70 pounds per hour; NOx = 7 ton per year; SO2 = 7 ton per year and 0.9 pounds per hour; PM10 = 7 ton per year and 0.9 pounds per hour. For most FEC permits, modeling should be conducted if emissions are greater than the first-level threshold and les than the second-level threshold.

  The modeler should compare the thresholds to the projected emissions to generally govern the refinement of the analyses needed to demonstrate compliance for a FEC permit. For emissions substantially above the thresholds, especially if resulting modeled impacts are near applicable air quality standards, the FEC modeling analysis should thoroughly evaluate potential scenarios for operational variability and future growth, evaluating multiple scenarios of stack configurations and/or potential building configurations. If emissions are only slightly greater than first-level thresholds, then a more simplistic approach may be adequate.

- Comment 2: The application should provide documentation and justification for stack parameters used in the modeling analyses, clearly showing how stack gas temperatures and flow rates were estimated. In most instances, applicants should use typical parameters, not maximum temperatures and flow rates.

- Comment 3: Spokane, Washington meteorological data are the most representative of reasonably available, processed data, although these data are of questionable representativeness for conditions in Post Falls, Idaho. To account for this greater uncertainty, modeled impacts (before inclusion of a background concentration) should be increased by 20 percent. If compliance cannot be demonstrated with this increase, DEQ dispersion modeling staff should be consulted to evaluate potential alternative methods.

- Comment 4: The proposed receptor grid appears reasonable. However, it is the applicant's responsibility to use a sufficiently tight receptor network such that the maximum modeled concentration is reasonably resolved. If DEQ conducts verification modeling analyses with a tighter receptor grid and compliance with standards is no longer demonstrated, the permit will be denied.

- Comment 5: When modeling carcinogenic TAPs (IDAPA 58.01.01.586), the applicant may use a 5-year meteorological data set, using the period average concentration, rather than five separate 1-year data sets. When modeling for short-term PM10 standard compliance the applicant may use a 5-year combined data set and use the maximum 6^{th} high modeled concentration, rather than using the maximum 2^{nd} high of each year modeled separately.

- Comment 6: A PM10 background concentration of 67 $\mu g/m^3$ for the 24-hour averaging period and 23.7 $\mu g/m^3$ for the annual averaging period is based on Post Falls monitoring data. For other criteria pollutants DEQ determined default background concentrations for small town/suburban areas are most appropriate for the Post Falls areal: CO 1-hr = 10,200 $\mu g/m^3$; CO 8-hr = 3,400 $\mu g/m^3$; NO_2 annual = 32 $\mu g/m^3$; SO_2 3-hr = 42 $\mu g/m^3$; SO_2 24-hr = 26 $\mu g/m^3$; SO_2 annual = 8 $\mu g/m^3$; Pb quarterly = 0.03 $\mu g/m^3$.

- Comment 7: No co-contributing sources were identified by DEQ in the area where the proposed facility will be located.

- Comment 8: Attached are Spokane meteorological files as processed through AERMET.

DEQ's modeling staff considers the submitted dispersion modeling protocol, with resolution of the additional items noted above, to be approved. It should be noted, however, that the approval of this modeling protocol is not meant to imply approval of a completed dispersion modeling analysis. Please refer to the *State of Idaho Air Quality Modeling Guideline*, which is available on the Internet at http://www.deq.state.id.us/air/permits_forms/permitting/modeling_guideline.pdf, for further guidance.

To ensure a complete and timely review of the final analysis, our modeling staff requests that electronic copies of all modeling input and output files (including BPIP, raw meteorological data files, AERMET input and output files, and AERMAP input and output files) are submitted with an analysis report. If DEQ provided model-ready meteorological data files, then these do not need to be resubmitted to DEQ with the application. If you have any further questions or comments, please contact me at (208) 373-0112.

Sincerely,

Kevin Schilling
Stationary Source Air Modeling Coordinator
Idaho Department of Environmental Quality
208 373-0112

Quintiliano, Sharon

From: Fitzpatrick, Marjorie
Sent: Tuesday, April 17, 2007 10:14 AM
To: Quintiliano, Sharon
Subject: FW: Biopol Issue with DEM Imports (EHS07308.01)

Marj Fitzpatrick, QEP
IES Engineers
1720 Walton Road
Blue Bell, PA 19422
610-828-3078
Fax: 610-828-7842
mfitzpatrick@iesengineers.com

-----Original Message-----
From: Kevin.Schilling@deq.idaho.gov [mailto:Kevin.Schilling@deq.idaho.gov]
Sent: Tuesday, April 03, 2007 6:18 PM
To: MFITZPATRICK@iesengineers.com
Subject: RE: Biopol Issue with DEM Imports (EHS07308.01)

Marjorie,

I opened your model input file a looked over things from the standpoint of how fast the model will run. I think the main issue is the 14,000 receptors. I would recommend you use multiple grid spacing within the same run. At locations along the property line out to about 50 meters you may want to use 10 - 25 meter spacing, but after you get out over 200 meters, you could probably go 100 meter spacing; and you could probably go to something like 500 meter spacing out beyond 1500 meters.

I'm still looking into the dem problem.

Kevin

From: Fitzpatrick, Marjorie [mailto:MFITZPATRICK@iesengineers.com]
Sent: Monday, April 02, 2007 1:05 PM
To: Kevin Schilling
Cc: Schlosser, Robert; Maye, Christopher
Subject: FW: Biopol Issue with DEM Imports (EHS07308.01)

As you requested, we are forwarding the issue we are having with the Biopol DEM files. Since we spoke, I found out that we also sent an e-mail to EPA to see if they have any thoughts on this as well. Since we are expecting the max at or near the property line, the unreasonable rise in elevation doesn't seem like something we want in the model runs.

If this isn't resolved in the next day, we will take you up on your suggestion of just running it in flat terrain. If we end up doing that, I'll send you an e-mail as a way to "document" our change in approach from the approved protocol.

Thanks for your assistance.

Marj Fitzpatrick, QEP
IES Engineers
1720 Walton Road
Blue Bell, PA 19422
610-828-3078
Fax: 610-828-7842
mfitzpatrick@iesengineers.com
-----Original Message-----
From: Maye, Christopher
Sent: Friday, March 30, 2007 5:04 PM
To: support@trinityconsultants.com
Cc: Fitzpatrick, Marjorie
Subject:

Please Help:

I just called this request in at about 4:30 PM today.

The problem I am having is that I am getting abnormally high Height Scale values when I import the dem elevation data using AERMAP for the entire receptor grid.

Things I have tried:
I initially tried to import just the boundary receptors with the dem that surrounds the facility (8270 dem file). That yielded reasonable results.

I then tried a small discrete receptor grid that slightly extended into the dem file immediately east of the 8270 dem file, and the height scale appeared to give reasonable results.

However, when I tried to import the entire grid elevations, the height scales looked abnormally high in bands of receptors (as scrolling down in table view). I tried obtaining the dems from different sources (webgis.com first, then went to data.geocomm.com to determine if the problem was with the original dem, but had the same result.

Please let me know if you find anything that may help me resolve the problem.

I can be reached at this email address, and by phone at 610-828-3078, extension 302.

Thanks so much for your help,

Chris Maye
Senior Project Engineer
IES Engineers

APPENDIX 3-B

FACILITY SITE PLAN

Table 3-B
Comparison of Model ID in Modeling Results and Stack ID on Plot Plan

Model ID	Stack ID
SRC-1	S-1
SRC-1	S-2
SRC-1	S-3
SRC-1	S-4
SRC-5	S-5
SRC-6	S-6
SRC-7	S-7
SRC-8	S-8
SRC-9	S-9
SRC-10	S-10
SRC-11	S-11
SRC-12	S-12
SRC-13	S-13
SRC-14	S-14
SRC-15	S-15
SRC-16	S-16
SRC-17	S-17
SRC-18	S-18
SRC-19	S-19
SRC-21	S-21
SRC-22	S-22
SRC-24	S-24
SRC-25	S-25
SRC-26	S-26
SRC-27	S-27
SRC-28	S-28
SRC-29	S-29
SRC-30	S-30
SRC-31	S-31
SRC-32	S-32
SRC-35	S-35

APPENDIX 3-C

DEPARTMENT'S APPENDIX C FORM

Idaho DEQ Air Dispersion Modeling Checklist

As a requirement of the air permitting process, an air dispersion modeling analysis (screening and/or refined) must be conducted. Air dispersion models are used to predict the potential impact a source may have on the air shed in which it is located. This checklist will aid in collecting all of the necessary information to perform a complete modeling analysis. The EPA's *Guideline on Air Quality Models* (EPA 2001) and this guideline should be used as a reference to ensure that the modeling techniques used will meet federal and state requirements. Please include sufficient computer disk copies of the DOS versions of input and output files so DEQ can reproduce model runs. DEQ must be able to rerun the input files on the DOS versions of the models. Copies of the meteorological data files used and all building information must also be included. A scaled plot plan showing the location of all structures and emission points needs to be submitted as part of the permitting application. It is strongly recommended that the facility contact the DEQ modeling coordinator prior to performing an air quality assessment to negotiate a modeling protocol. Units must be noted where appropriate, both English and metric units are acceptable.

It is important that the **most recent model versions** be utilized in any analysis.

1. Name of Applicant/Company:

   Biopol Laboratory, Inc.

   Facility Description:

   Facility will purify allergens for subsequent production of vaccines at other locations.

   Dispersion Model(s) Used:

   SCREEN3

2. Source Classification:

	PM_{10}	NO_x	PCE
Number of Point Sources (Section 3)	28	3	0
Number of Area Sources (Section 4)	0	0	0
Number of Volume Sources (Section 5)	0	3	1

3. Stack/Point Source Parameters (please include for each stack/point source modeled). List the **maximum** emissions rate(s) for each pollutant. NOTE: If the stack is not circular, use equivalent dimensions determined by AREA = $\pi d^2/4$, where d is the inner stack diameter. Units must be noted where appropriate, both English and metric units are acceptable. (Note: $PM_{2.5}$ refers to particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers)

Source SRC 1

PM_{10} 0.2 lb/hr $PM_{2.5}$ ____ NO_x 1.2 lb/hr SO_2 ____ CO ____ VOC ____

Toxic(s) (Please List): ____

Stack Height 34 ft. Stack Diameter 1 ft. Stack Temperature 405 F

Stack Exit Velocity 2,306 ft/min and/or Actual Stack Flow Rate 1,811 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

Source SRC 5

PM_{10} 0.02 lb/hr $PM_{2.5}$ ____ NO_x 0.12 lb/hr SO_2 ____ CO ____ VOC ____

Toxic(s) (Please List): ____

Stack Height 34 ft. Stack Diameter 1 ft. Stack Temperature 394 °F

Stack Exit Velocity 950 ft/min and/or Actual Stack Flow Rate 746 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

Source SRC 6

PM_{10} 0.44 lb/hr $PM_{2.5}$ ____ NO_x 0.71 lb/hr SO_2 ____ CO ____ VOC ____

Toxic(s) (Please List): ____

Stack Height 12 ft. Stack Diameter 1 ft. Stack Temperature 70 F

Stack Exit Velocity 9,899 ft/min and/or Actual Stack Flow Rate 7,775 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

3. Stack/Point Source Parameters (please include for each stack/point source modeled). List the **maximum** emissions rate(s) for each pollutant. NOTE: If the stack is not circular, use equivalent dimensions determined by AREA = $\pi d^2/4$, where d is the inner stack diameter. Units must be noted where appropriate, both English and metric units are acceptable. (Note: $PM_{2.5}$ refers to particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers)

Source SRC 8

PM_{10} 0.0005 lb/hr $PM_{2.5}$ ______ NO_x ______ SO_2 ______ CO ______ VOC ______

Toxic(s) (Please List): ______

Stack Height 34 ft. Stack Diameter 0.8 ft. Stack Temperature 70 °F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 1,508 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

Source SRC 9

PM_{10} 0.0004 lb/hr $PM_{2.5}$ ______ NO_x ______ SO_2 ______ CO ______ VOC ______

Toxic(s) (Please List): ______

Stack Height 34 ft. Stack Diameter 1.3 ft. Stack Temperature 394 °F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 4,250 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

Source SRC 10

PM_{10} 0.0052 lb/hr $PM_{2.5}$ ______ NO_x 0.71 lb/hr SO_2 ______ CO ______ VOC ______

Toxic(s) (Please List): ______

Stack Height 34 ft. Stack Diameter 3.2 ft. Stack Temperature 70 ° F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 24,506 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

3. Stack/Point Source Parameters (please include for each stack/point source modeled). List the **maximum** emissions rate(s) for each pollutant. NOTE: If the stack is not circular, use equivalent dimensions determined by AREA = $\pi d^2/4$, where d is the inner stack diameter. Units must be noted where appropriate, both English and metric units are acceptable. (Note: $PM_{2.5}$ refers to particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers)

Source SRC 11

PM_{10} 0.0045 lb/hr $PM_{2.5}$ ______ NO_x ______ SO_2 ______ CO ______ VOC ______

Toxic(s) (Please List): ______

Stack Height 34 ft. Stack Diameter 29 Stack Temperature 70 °F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 19,994 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

Source SRC 13

PM_{10} 0.0006 lb/hr $PM_{2.5}$ ______ NO_x ______ SO_2 ______ CO ______ VOC ______

Toxic(s) (Please List): ______

Stack Height 34 ft. Stack Diameter 2.5 ft. Stack Temperature 70 °F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 14,500

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

Source SRC 14

PM_{10} 0.0045 lb/hr $PM_{2.5}$ ______ NO_x 0.71 lb/hr SO_2 ______ CO ______ VOC ______

Toxic(s) (Please List): ______

Stack Height 45 ft. Stack Diameter 3 ft. Stack Temperature 70 ° F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 20,994 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

3. Stack/Point Source Parameters (please include for each stack/point source modeled). List the **maximum** emissions rate(s) for each pollutant. NOTE: If the stack is not circular, use equivalent dimensions determined by AREA = $\pi d^2/4$, where d is the inner stack diameter. Units must be noted where appropriate, both English and metric units are acceptable. (Note: $PM_{2.5}$ refers to particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers)

Source SRC 16

PM_{10} 0.0045 lb/hr $PM_{2.5}$ ____ NO_x ____ SO_2 ____ CO ____ VOC ____

Toxic(s) (Please List): ____

Stack Height 45 ft. Stack Diameter 3 ft. Stack Temperature 70 °F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 20,994 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

Source SRC 17

PM_{10} 0.0045 lb/hr $PM_{2.5}$ ____ NO_x ____ SO_2 ____ CO ____ VOC ____

Toxic(s) (Please List): ____

Stack Height 45 ft. Stack Diameter 3 ft. Stack Temperature 70 °F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 20,994 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

Source SRC 18

PM_{10} 0.0077 lb/hr $PM_{2.5}$ ____ NO_x 0.71 SO_2 ____ CO ____ VOC ____

Toxic(s) (Please List): ____

Stack Height 24 ft. Stack Diameter 3.2 ft. Stack Temperature 70 ° F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 24,278 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

3. Stack/Point Source Parameters (please include for each stack/point source modeled). List the **maximum** emissions rate(s) for each pollutant. NOTE: If the stack is not circular, use equivalent dimensions determined by AREA = $\pi d^2/4$, where d is the inner stack diameter. Units must be noted where appropriate, both English and metric units are acceptable. (Note: $PM_{2.5}$ refers to particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers)

Source SRC 19

PM_{10} 0.0052 lb/hr $PM_{2.5}$ ______ NO_x ______ SO_2 ______ CO ______ VOC ______

Toxic(s) (Please List): ______

Stack Height 47 ft. Stack Diameter 3.2 ft. Stack Temperature 70 °F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 24,506 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

Source SRC 7

PM_{10} 1.06 lb/hr $PM_{2.5}$ ______ NO_x ______ SO_2 ______ CO ______ VOC ______

Toxic(s) (Please List): ______

Stack Height 34 ft. Stack Diameter 2.4 ft. Stack Temperature 70 °F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 6,000 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

Source SRC 12

PM_{10} 0.17 lb/hr $PM_{2.5}$ ______ NO_x 0.71 SO_2 ______ CO ______ VOC ______

Toxic(s) (Please List): ______

Stack Height 34 ft. Stack Diameter 1 ft. Stack Temperature 70 ° F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 2,000 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

3. Stack/Point Source Parameters (please include for each stack/point source modeled). List the **maximum** emissions rate(s) for each pollutant. NOTE: If the stack is not circular, use equivalent dimensions determined by AREA = $\pi d^2/4$, where d is the inner stack diameter. Units must be noted where appropriate, both English and metric units are acceptable. (Note: $PM_{2.5}$ refers to particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers)

Source SRC 15

PM_{10} 0.43 lb/hr $PM_{2.5}$ ____ NO_x ____ SO_2 ____ CO ____ VOC ____

Toxic(s) (Please List): ____

Stack Height 34 ft. Stack Diameter 2.0 Stack Temperature 70 °F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 9,850 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

Source SRC 21

PM_{10} 0.43 lb/hr $PM_{2.5}$ ____ NO_x ____ SO_2 ____ CO ____ VOC ____

Toxic(s) (Please List): ____

Stack Height 45 ft. Stack Diameter 1.5 ft. Stack Temperature 70 °F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 5,000 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

Source SRC 22

PM_{10} 0.04 lb/hr $PM_{2.5}$ ____ NO_x 0.71 SO_2 ____ CO ____ VOC ____

Toxic(s) (Please List): ____

Stack Height 45 ft. Stack Diameter 0.5 ft. Stack Temperature 70 ° F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 500 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

3. Stack/Point Source Parameters (please include for each stack/point source modeled). List the **maximum** emissions rate(s) for each pollutant. NOTE: If the stack is not circular, use equivalent dimensions determined by AREA = $\pi d^2/4$, where d is the inner stack diameter. Units must be noted where appropriate, both English and metric units are acceptable. (Note: $PM_{2.5}$ refers to particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers)

Source SRC24

PM_{10} 0.11 lb/hr $PM_{2.5}$ ______ NO_x ______ SO_2 ______ CO ______ VOC ______

Toxic(s) (Please List): ______

Stack Height 24 ft. Stack Diameter 0.72 ft. Stack Temperature 70 °F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 1,250 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

Source SRC 25

PM_{10} 0.04 lb/hr $PM_{2.5}$ ______ NO_x ______ SO_2 ______ CO ______ VOC ______

Toxic(s) (Please List): ______

Stack Height 24 ft. Stack Diameter 0.5 ft. Stack Temperature 70 °F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 500 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

Source SRC 26

PM_{10} 0.26 lb/hr $PM_{2.5}$ ______ NO_x 0.71 SO_2 ______ CO ______ VOC ______

Toxic(s) (Please List): ______

Stack Height 24 ft. Stack Diameter 1.1 ft. Stack Temperature 70 ° F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 3,000 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

3. Stack/Point Source Parameters (please include for each stack/point source modeled). List the **maximum** emissions rate(s) for each pollutant. NOTE: If the stack is not circular, use equivalent dimensions determined by AREA = $\pi d^2/4$, where d is the inner stack diameter. Units must be noted where appropriate, both English and metric units are acceptable. (Note: $PM_{2.5}$ refers to particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers)

Source SRC 27

PM_{10} 0.430 lb/hr $PM_{2.5}$ ____ NO_x ____ SO_2 ____ CO ____ VOC ____

Toxic(s) (Please List): ____

Stack Height 45 ft. Stack Diameter 1.5 ft. Stack Temperature 70 °F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 5,000 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

Source SRC 28

PM_{10} 0.04 lb/hr $PM_{2.5}$ ____ NO_x ____ SO_2 ____ CO ____ VOC ____

Toxic(s) (Please List): ____

Stack Height 45 ft. Stack Diameter 0.5 ft. Stack Temperature 70 °F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 500 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

Source SRC 29

PM_{10} 0.04 lb/hr $PM_{2.5}$ ____ NO_x 0.71 SO_2 ____ CO ____ VOC ____

Toxic(s) (Please List): ____

Stack Height 45 ft. Stack Diameter 0.5 ft. Stack Temperature 70 ° F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 500 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

3. Stack/Point Source Parameters (please include for each stack/point source modeled). List the **maximum** emissions rate(s) for each pollutant. NOTE: If the stack is not circular, use equivalent dimensions determined by AREA = $\pi d^2/4$, where d is the inner stack diameter. Units must be noted where appropriate, both English and metric units are acceptable. (Note: $PM_{2.5}$ refers to particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers)

Source SRC 30

PM_{10} 0.430 lb/hr $PM_{2.5}$ ____ NO_x ____ SO_2 ____ CO ____ VOC ____

Toxic(s) (Please List): ____

Stack Height 45 ft. Stack Diameter 0.5 ft. Stack Temperature 70 °F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 5,000 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

Source SRC 31

PM_{10} 0.04 lb/hr $PM_{2.5}$ ____ NO_x ____ SO_2 ____ CO ____ VOC ____

Toxic(s) (Please List): ____

Stack Height 45 ft. Stack Diameter 0.5 ft. Stack Temperature 70 °F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 500 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

Source SRC 32

PM_{10} 0.04 lb/hr $PM_{2.5}$ ____ NO_x 0.71 SO_2 ____ CO ____ VOC ____

Toxic(s) (Please List): ____

Stack Height 45 ft. Stack Diameter 0.5 ft. Stack Temperature 70 ° F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 500 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

3. Stack/Point Source Parameters (please include for each stack/point source modeled). List the **maximum** emissions rate(s) for each pollutant. NOTE: If the stack is not circular, use equivalent dimensions determined by AREA = $\pi d^2/4$, where d is the inner stack diameter. Units must be noted where appropriate, both English and metric units are acceptable. (Note: $PM_{2.5}$ refers to particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers)

Source SRC 35

PM_{10} 0.04 lb/hr $PM_{2.5}$ ______ NO_x ______ SO_2 ______ CO ______ VOC ______

Toxic(s) (Please List): ______

Stack Height 45 ft. Stack Diameter 0.5 ft. Stack Temperature 70 °F

Stack Exit Velocity 3,000 ft/min and/or Actual Stack Flow Rate 500 acfm

Stack Orientation (Horizontal or Vertical) Vertical Rain Cap Present (Y or N) N

Source ______

PM_{10} ______ $PM_{2.5}$ ______ NO_x ______ SO_2 ______ CO ______ VOC ______

Toxic(s) (Please List): ______

Stack Height ______ Stack Diameter ______ Stack Temperature ______

Stack Exit Velocity ______ and/or Actual Stack Flow Rate ______

Stack Orientation (Horizontal or Vertical) ______ Rain Cap Present (Y or N) ______

Source ______

PM_{10} ______ $PM_{2.5}$ ______ NO_x ______ SO_2 ______ CO ______ VOC ______

Toxic(s) (Please List): ______

Stack Height ______ Stack Diameter ______ Stack Temperature ______

Stack Exit Velocity ______ and/or Actual Stack Flow Rate ______

Stack Orientation (Horizontal or Vertical) ______ Rain Cap Present (Y or N) ______

4. Area Source Parameters (please include for each area source modeled). List the **maximum** emissions rate(s) for each pollutant. Units must be noted where appropriate, both English and metric units are acceptable.

Source________________ Not Applicable

PM_{10} __________ $PM_{2.5}$ __________ NO_x __________ SO_2 __________ CO__________ VOC ________________

Toxic(s) (Please List):____

Source Height __________ Easterly Dimension __________________ Northerly Dimension _________________

Initial Vertical Dimension ____________________________ Angle from North ____________________

Source________________

PM_{10} __________ $PM_{2.5}$ __________ NO_x __________ SO_2 __________ CO__________ VOC ________________

Toxic(s) (Please List):____

Source Height __________ Easterly Dimension __________________ Northerly Dimension _________________

Initial Vertical Dimension ____________________________ Angle from North ____________________

Source________________

PM_{10} __________ $PM_{2.5}$ __________ NO_x __________ SO_2 __________ CO__________ VOC ________________

Toxic(s) (Please List):____

Source Height __________ Easterly Dimension __________________ Northerly Dimension _________________

Initial Vertical Dimension ____________________________ Angle from North ____________________

Source________________

PM_{10} __________ $PM_{2.5}$ __________ NO_x __________ SO_2 __________ CO__________ VOC ________________

Toxic(s) (Please List):____

Source Height __________ Easterly Dimension __________________ Northerly Dimension _________________

Initial Vertical Dimension ____________________________ Angle from North ____________________

5. Volume Source Parameters (please include for each volume source modeled). List the **maximum** emissions rate(s) for each pollutant. Units must be noted where appropriate, both English and metric units are acceptable.

Source SRC 37

PM_{10} ______ $PM_{2.5}$ ______ NO_x 0.07 lb/hr SO_2 ______ CO ______ VOC ______

Toxic(s) (Please List): ______

Source Height 29 ft. Initial Horizontal Dimension 58 ft.

Initial Vertical Dimension 13.4 ft.

Source SRC 38

PM_{10} ______ $PM_{2.5}$ ______ NO_x 0.088 lb/hr SO_2 ______ CO ______ VOC ______

Toxic(s) (Please List): ______

Source Height 40 ft. Initial Horizontal Dimension 22 ft.

Initial Vertical Dimension 18.7 ft.

Source SRC 39

PM_{10} ______ $PM_{2.5}$ ______ NO_x 0.085 lb/hr SO_2 ______ CO ______ VOC ______

Toxic(s) (Please List): ______

Source Height 18.7 ft. Initial Horizontal Dimension 35 ft.

Initial Vertical Dimension 8.9 ft.

Source SRC 40

PM_{10} ______ $PM_{2.5}$ ______ NO_x ______ SO_2 ______ CO ______ VOC ______

Toxic(s) (Please List): Perchloroethylene

Source Height 20 ft. Initial Horizontal Dimension 26.6 ft.

Initial Vertical Dimension 9.2 ft.

6. Structure Parameters: **(Applies to any and all structures within the property boundary(ies) as well as nearby structures that may influence the dispersion of pollutants emitted by the source(s)).** Units must be noted where appropriate, both English and metric units are acceptable.

All Building Dimensions are in Feet.

Building Administration (Main Building)

Building Tier No. 1 Height: 29 Building Tier No. 1 Length: 113 Building Tier No. 1 Width: 103

Building Tier No. 2 Height: ______ Building Tier No. 2 Length: ______ Building Tier No. 2 Width: ______

Building Tier No. 3 Height: ______ Building Tier No. 3 Length: ______ Building Tier No. 3 Width: ______

Building Timothy Pollen

Building Tier No. 1 Height: 40 Building Tier No. 1 Length: 87 Building Tier No. 1 Width: 34

Building Tier No. 2 Height: ______ Building Tier No. 2 Length: ______ Building Tier No. 2 Width: ______

Building Tier No. 3 Height: ______ Building Tier No. 3 Length: ______ Building Tier No. 3 Width: ______

Building Ragweed Pollen

Building Tier No. 1 Height: 40 Building Tier No. 1 Length: 87 Building Tier No. 1 Width: 34

Building Tier No. 2 Height: ______ Building Tier No. 2 Length: ______ Building Tier No. 2 Width: ______

Building Tier No. 3 Height: ______ Building Tier No. 3 Length: ______ Building Tier No. 3 Width: ______

Building Birchwood Pollen

Building Tier No. 1 Height: 40 Building Tier No. 1 Length: 87 Building Tier No. 1 Width: 34

Building Tier No. 2 Height: ______ Building Tier No. 2 Length: ______ Building Tier No. 2 Width: ______

Building Tier No. 3 Height: ______ Building Tier No. 3 Length: ______ Building Tier No. 3 Width: ______

Tank ______ Tank Height ______ Tank Diameter ______

Tank ______ Tank Height ______ Tank Diameter ______

Tank ______ Tank Height ______ Tank Diameter ______

Tank ______ Tank Height ______ Tank Diameter ______

6. Structure Parameters: **(Applies to any and all structures within the property boundary(ies) as well as nearby structures that may influence the dispersion of pollutants emitted by the source(s)).** Units must be noted where appropriate, both English and metric units are acceptable.

All Building Dimensions are in Feet.

Building Spanish Mites (Present)

Building Tier No. 1 Height: 19 Building Tier No. 1 Length: 106 Building Tier No. 1 Width: 103

Building Tier No. 2 Height: ______ Building Tier No. 2 Length: ______ Building Tier No. 2 Width: ______

Building Tier No. 3 Height: ______ Building Tier No. 3 Length: ______ Building Tier No. 3 Width: ______

Building Spanish Mites (Future)

Building Tier No. 1 Height: 19 Building Tier No. 1 Length: 87 Building Tier No. 1 Width: 76

Building Tier No. 2 Height: ______ Building Tier No. 2 Length: ______ Building Tier No. 2 Width: ______

Building Tier No. 3 Height: ______ Building Tier No. 3 Length: ______ Building Tier No. 3 Width: ______

Building Warehouse

Building Tier No. 1 Height: 29 Building Tier No. 1 Length: 148 Building Tier No. 1 Width: 97

Building Tier No. 2 Height: ______ Building Tier No. 2 Length: ______ Building Tier No. 2 Width: ______

Building Tier No. 3 Height: ______ Building Tier No. 3 Length: ______ Building Tier No. 3 Width: ______

Building Central Utility

Building Tier No. 1 Height: 29 Building Tier No. 1 Length: 125 Building Tier No. 1 Width: 35

Building Tier No. 2 Height: ______ Building Tier No. 2 Length: ______ Building Tier No. 2 Width: ______

Building Tier No. 3 Height: ______ Building Tier No. 3 Length: ______ Building Tier No. 3 Width: ______

Tank NA Tank Height ________ Tank Diameter ________

Tank ________ Tank Height ________ Tank Diameter ________

Tank ________ Tank Height ________ Tank Diameter ________

Tank ________ Tank Height ________ Tank Diameter ________

7. Scaled Plot Plan: (Make sure that all of the buildings and tanks shown on the scaled plot plan are also listed in section 6.)

Emission Release Locations:______ Buildings: on-site-only (On site and neighboring) Tanks: on-site-only (On site and neighboring)

Property Boundary(ies):_________ Potential Co-contributor(s):_________________________

Sensitive Receptors:_____________

Note: A sensitive receptor is defined in IDAPA 58.01.01.007.10 as, "any residence, building, or location occupied or frequented by persons who, due to age, infirmity, or health-based criteria, may be more susceptible to the deleterious effects of a toxic air pollutant than the general population including, but not limited to, elementary and secondary schools, day care centers, playgrounds and parks, hospitals, clinics, and nursing homes".

8. Topographic Map Showing: NA - Aermod used; however, a topographic map is provided in Attachment 3-D.

Source Location(s) ______ Buildings ____________ (On site and neighboring) Tanks ________ (On site and neighboring)

Property Boundary(ies) _________ Model Receptors _______

Maximum Impact Locations______

9. Meteorology Used (upper air and surface data):

Site-Specific: Data provided by DEQ for 1987 - 91

A quality control and quality assurance analysis, consistent with EPA guidelines, should be included for any on-site data used other than that supplied by the NWS. Contact DEQ regarding the adequacy of this data before use.

NWS Data Representative of the Site ___________________

10. Land Use Classification:

Urban ________ Rural ________ (DEQ can be contacted for further guidance on source classification)

Justification:

Review of USGS topographic map of area.

Completeness Determination Questions:

- Was a modeling protocol approved by DEQ prior to permit application? Negotiating a modeling protocol with DEQ assures the general modeling approach will be accepted. Yes

- Is a justification given explaining why a particular dispersion model was used? Yes

- Did you document and justify input parameters and model settings? (Please include a written justification.) Yes

- Were grid receptors placed 100 to 500 meters apart for the initial modeling analysis in order to find the area of maximum impact? Yes

- Were grid receptors placed 25 to 50 meters apart in the area of maximum impact? Yes

- What ambient air quality standards apply (e.g., NAAQS, significance standards, acceptable ambient concentration for carcinogens and non-carcinogens (AACC, AAC, respectively), PSD increment standards)? TAP for perchloroethylene -- 2.1 µg/m ^{3} NAAQS for PM_{10}, NO_x

- Were DEQ-approved background concentrations included in the modeling analysis (attainment and unclassified areas only)? Yes

Considerations for major pollution sources and sources subject to PSD regulations: NA

- Was DEQ contacted regarding the need for (and quality control of) pre-construction monitoring data?

- Was a visibility analysis performed?

- Was the area of significant impact documented?

- Were impacts included (on disk) at all integral UTM coordinates within the significant impact area?

- If a major facility (as defined in IDAPA 58.01.01.006.55), was cumulative increment consumption analyzed?

Signature of modeler (please print and sign name) Marjorie J. Fitzpatrick

Marjorie J. Fitzpatrick, QEP

Telephone Number 610-828-3078

Name of DEQ Modeling Contact Kevin Schilling

Telephone Number (208) 373-0502

APPENDIX 3-D

ELECTRONIC DATA FILES